

## Scope of Claim

1. A semiconductor device comprising:

m-pieces of current sources  $I_1, I_2, \dots$ , and  $I_m$ ; and

5 a switching circuit including:

n-pieces of input terminals  $D_1, D_2, \dots$ , and  $D_n$ ; and

m-pieces of output terminals  $O_1, O_2, \dots$ , and  $O_m$ ,

wherein the current source  $I_k$  and the output terminal  $O_k$  of the switching circuit are electrically connected to each other ( $k = 1$  to  $m$ ), and

10 the switching circuit selects the output terminals  $O_1, O_2, \dots$ , and  $O_m$  to be connected to the input terminal  $D_k$  by using signals which are input to the input terminals  $D_1, D_2, \dots$ , and  $D_n$  of the switching circuit.

2. The semiconductor device according to claim 1, wherein the switching circuit selects  
15 the output terminals  $O_1, O_2, \dots$ , and  $O_m$  to be connected to the input terminal  $D_k$  by further using a signal which is input externally.

3. A display device comprising the semiconductor device according to claim 1.

20 4. An electronic apparatus using in its display portion a display device comprising the semiconductor device according to claim 1.

5. A semiconductor device comprising:

m-pieces of current sources; and

25 a switching circuit including n-pieces of input terminals and m-pieces of output terminals,

wherein the m-pieces of the current sources are each connected to one of the different output terminals,

30 at least one of the input terminals of the switching circuit is connected to one or a plurality of switches,

the switch is connected to one of the m-pieces of the output terminals, and  
the switching circuit controls ON/OFF of the switch by using a signal which is input  
from at least one of the n-pieces of the input terminals.

- 5           6. A semiconductor device comprising:  
          m-pieces of current sources; and  
          a switching circuit including n-pieces of input terminals and m-pieces of output  
          terminals,  
          wherein the m-pieces of the current sources are each connected to one of the different  
10   output terminals,  
          at least one of the output terminals of the switching circuit is connected to one or a  
          plurality of switches,  
          the switch is connected to one of the n-pieces of the input terminals, and  
          the switching circuit controls ON/OFF of the switch by using a signal which is input  
15   from at least one of the n-pieces of the input terminals.

7. The semiconductor device according to claim 5 or 6, wherein the switching circuit  
controls ON/OFF of the switching circuit by further using a signal which is input externally.

- 20           8. The semiconductor device according to claim 5 or 6, wherein the switch comprises a  
          digital circuit.

9. A display device comprising the semiconductor device according to claim 5 or 6.

- 25           10. An electronic apparatus using in its display portion a display device comprising the  
          semiconductor device according to claim 5 or 6.

11. A digital-analog converter circuit for converting an n-bit digital voltage signal into  
          an analog current signal, comprising:  
30           m-pieces of current sources; and

a switching circuit including n-pieces of input terminals and m-pieces of output terminals,

wherein the m-pieces of the current sources are each connected to one of the different output terminals, and

5       the switching circuit selects an output terminal to be connected to the n-pieces of the input terminals among the m-pieces of the output terminals by using at least one of the n-bit digital voltage signals.

12. The digital-analog converter circuit according to claim 11, wherein the switching  
10       circuit selects an output terminal to be connected to the n-pieces of the input terminals among the m-pieces of the output terminals by further using a signal which is input externally.

13. A digital-analog converter circuit for converting an n-bit digital voltage signal into an analog current signal, comprising:

15       m-pieces of current sources; and

a switching circuit including n-pieces of input terminals, m-pieces of output terminals, and m-pieces of switch units,

wherein the m-pieces of the current sources are each connected to one of the different output terminals,

20       the m-pieces of the output terminals are each connected to one of the different switch units,

the m-pieces of the switch units are each connected to one or a plurality of the input terminals, and

25       the switching circuit controls the m-pieces of the switch units by using at least one of the n-bit digital voltage signals, thereby selecting an input terminal to be connected to the output terminal.

14. The digital-analog converter circuit according to claim 13, wherein the switching  
circuit controls the m-pieces of the switch units by further using a signal which is input  
30       externally.

15. A digital-analog converter circuit for converting an n-bit digital voltage signal into an analog current signal, comprising:

m-pieces of current sources; and

5 a switching circuit including, n-pieces of input terminals, m-pieces of output terminals, and k ( $1 = k < m$ )-pieces of switch units,

wherein the m-pieces of the current sources are each connected to one of the different output terminals,

10 the k-pieces of the output terminals among m-pieces are each connected to one of the switch units,

the rest ( $m - k$ )-pieces of the output terminals are each connected to at least one of the input terminals without the intermediary of the switch unit,

the k-pieces of the switch units are each connected to one or a plurality of the input terminals, and

15 the switching circuit controls the k-pieces of the switch units by using at least one of the n-bit digital voltage signals, thereby selecting an input terminal to be connected to the output terminal.

20 16. The digital-analog converter circuit according to claim 15, wherein the m-pieces of the switch units are controlled by further using a signal which is input externally.

17. A digital-analog converter circuit according to any one of claims 11, 13, and 15, wherein the switch unit comprises a digital circuit.

25 18. A display device comprising the digital-analog converter circuit according to any one of claims 11, 13, and 15 in a signal line driver circuit.

19. An electronic apparatus using in its display portion a display device comprising the digital-analog converter circuit according to any one of claims 11, 13, and 15.